

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Colin LOW, et al.) RE: Preliminary Amendment
)
Serial No.: Not yet assigned) Group: not yet assigned
)
Filed: Concurrently herewith) Examiner: not yet assigned
)
For: "METHOD OF ACCESSING) Our Ref: B-3472DIV1PCT 619164-7
SERVICE RESOURCE ITEMS THAT)
ARE FOR USE IN A)
TELECOMMUNICATIONS SYSTEM") Date: January 18, 2002

Commissioner of Patents and Trademarks
Box New Patent Application
Washington, D.C. 20231

Sir:

The above-identified application is a divisional application of U.S. Patent Application Serial No. 09/077,795 filed June 5, 1998. Prior to examining this divisional application, please enter the following amendments as appropriate:

IN THE TITLE

Please amend the title of invention to read:

--METHOD AND APPARATUS FOR DETERMINING A TELEPHONE NUMBER
FOR ACCESSING A TARGET ENTITY--

1005305.01302

IN THE SPECIFICATION

Please amend the first paragraph on page 1 of the specification as filed (see lines 7-9 on page 1) with the amended first paragraph on page 1 of the specification, which is set forth below. (Appendix A, which is enclosed herewith, shows how the first paragraph on page 1 of the specification as filed was amended to produce the amended first paragraph on page 1 of the specification.)

This is a divisional of co-pending U.S. Serial No. 09/077,795, filed on June 5, 1998, which is the U.S. National Stage Application of PCT International Application No. PCT/GB96/03055, filed on 11 December 1996. The present invention relates to a method and apparatus for determining a telephone number for accessing a target entity identified by a number string.

Please amend pages 16-18 of the specification as filed with amended pages 16-18 of the specification, which are set forth below. (Appendix A, which is enclosed herewith, shows how pages 16-18 of the specification as filed were amended to produce amended pages 16-18 of the specification.)

Internet calling party on the progress of call set to the destination telephone over the PSTN local to the telephone; this feedback need only be in terms of whether or not the call has succeeded.

According to one aspect of the present invention, there is provided a method of determining a telephone number for contacting a target entity identified by a number string, said method comprising the steps of:

- (a) - storing in the domain name system (DNS) of the Internet records each associated with a corresponding domain name and holding a telephone number of an entity associated with the domain name, each said domain name being related to a respective number string from which it can be derived by a process including parsing at least a substantial portion of the number string into at least a part of said domain name;
- (b) - applying said process to the said number string identifying the target entity whereby to form the related domain name; and
- (c) - supplying the domain name formed in step (b) to the DNS to retrieve the telephone number held in the corresponding said record.

According to another aspect of the invention, there is provided a method of determining a telephone number for contacting a target entity, said method comprising the steps of:

- (a) - forming, from a number string identifying the target entity, a domain name by a process including parsing at least a substantial portion of the number string into at least a part of said domain name;
- (b) - supplying the domain name formed in step (a) to the domain name system of the Internet and receiving back from the domain name system a resource record including a

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telephone number.

According to further aspect of the present invention, there is provided a method of determining a telephone number for contacting a target entity identified by a number string, said method comprising the steps of:

- (a) - storing in a DNS-type distributed database system, records each associated with a corresponding domain name and each holding a telephone number of an entity associated with the domain name, each said domain name being related to a respective number string from which it can be derived by a process including parsing at least a substantial portion of the number string into at least a part of said domain name;
- (b) - applying said process to the said number string identifying the target entity whereby to form the related domain name; and
- (c) - supplying the domain name formed in step (b) to the DNS-type distributed database to retrieve the telephone number held in the corresponding said record.

According to a still further aspect of the invention, there is provided a server of the domain name system of the Internet, the server holding at least one resource record that provides a mapping from a domain name to a telephone number of a party associated with the domain name, at least a substantial portion of the domain name being in the form of a number string that has been parsed into plural domain-name labels.

According to a yet further aspect of the invention, there is provided a DNS-type distributed database system holding at least one resource record that provides a mapping from a domain name to a telephone number of a party associated with the domain name, at least a substantial portion of the domain name being in the form of a number string that has been parsed into plural domain-name labels.

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IN THE CLAIMS

Please cancel Claims 1-18 as amended during International Preliminary Examination (IPE), without prejudice.

Please add the following new Claims:

19. (New) A method of determining a telephone number for contacting a target entity identified by a number string, said method comprising the steps of:

- (a) - storing in the domain name system (DNS) of the Internet records each associated with a corresponding domain name and holding a telephone number of an entity associated with the domain name, each said domain name being related to a respective number string from which it can be derived by a process including parsing at least a substantial portion of the number string into at least a part of said domain name;
- (b) - applying said process to the said number string identifying the target entity whereby to form the related domain name; and
- (c) - supplying the domain name formed in step (b) to the DNS to retrieve the telephone number held in the corresponding said record.

20. (New) A method according to claim 19, wherein each said number string is in telephone-number form.

21. (New) A method of accessing a target entity over a telephone network, in which a telephone number for the target entity is determined according to claim 19 and that telephone number is then used to call the target entity over the telephone network.

22. (New) A method of determining a telephone number for contacting a target entity, said method comprising the steps of:

- (a) - forming, from a number string identifying the target entity, a domain name by a process including parsing at least a substantial portion of the number string into at least a part of said domain name;

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(b) - supplying the domain name formed in step (a) to the domain name system of the Internet and receiving back from the domain name system a resource record including a telephone number.

23. (New) A method according to claim 22, wherein said number string is in telephone-number form.

24. (New) A method of accessing a target entity over a telephone network, in which a telephone number for the target entity is determined according to claim 22 and that telephone number is then used to call the target entity over the telephone network.

25. (New) A method of determining a telephone number for contacting a target entity identified by a number string, said method comprising the steps of:

- (a) - storing in a DNS-type distributed database system, records each associated with a corresponding domain name and each holding a telephone number of an entity associated with the domain name, each said domain name being related to a respective number string from which it can be derived by a process including parsing at least a substantial portion of the number string into at least a part of said domain name;
- (b) - applying said process to the said number string identifying the target entity whereby to form the related domain name; and
- (c) - supplying the domain name formed in step (b) to the DNS- type distributed database to retrieve the telephone number held in the corresponding said record.

26. (New) A method according to claim 25, wherein each said number string is in telephone-number form.

27. (New) A server of the domain name system of the Internet, the server holding at least one resource record that provides a mapping from a domain name to a telephone number of a party associated with the domain name, at least a substantial portion of the domain name

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being in the form of a number string that has been parsed into plural domain-name labels.

28. (New) A server according to claim 27, wherein said number string is at least a substantial portion of a telephone number.

29. (New) A DNS-type distributed database system holding at least one resource record that provides a mapping from a domain name to a telephone number of a party associated with the domain name, at least a substantial portion of the domain name being in the form of a number string that has been parsed into plural domain-name labels.

30. (New) A system according to claim 29, wherein said number string is at least a substantial portion of a telephone number.

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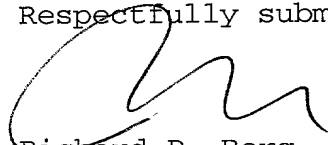
REMARKS

The Claims in the parent application, USSN 09/077,795, were amended during IPE. A copy of IPE-amended Claims 1-18, which are being canceled by this preliminary amendment, are attached hereto. These claims were prosecuted in this divisional application's parent application.

New Claims 19-30 are added by this amendment. These claims recite holding a telephone number record in connection with or associated with a domain name.

Amendment of the subject application is respectfully requested.

Respectfully submitted,



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Enclosure: copy of IPE-amended Claims (pages 54-57)
 Appendix A (7 pages)

1063305-0180

CLAIMS

1. A method of accessing service resource items (49) for use in respect of setting up bearer channels (60) through a switched telecommunications system, said method
5 including the steps of:

(a) — provisioning at least one server (51) connected to a computer network (50) with a plurality of service resource items (49) that are thereafter locatable on said computer network (50) by corresponding known URIs, said computer network being logically distinct from the telecommunications system, and said service
10 resource items (49) relating to setup control for bearer channels (60) through said telecommunications system with each said service resource item being associated with a respective predetermined code (54), said predetermined codes being distinct from said URIs and identifying end-point entities for said bearer channels;

15 (b) — providing a mapping (55) between each said predetermined code (54) and the said known URI of the service resource item (49) associated with that predetermined code; and

(c) — utilising a said predetermined code (54) to access a corresponding said service resource item by using said mapping (55) to determine the URI corresponding
20 to that resource item and then using this URI to access the service resource item (49) over said computer network (50).

2. A method according to claim 1, wherein at least some of said URIs are derivable from their corresponding said predetermined codes (54) by manipulation according to
25 a function specified by said mapping.

3. A method according to claim 1, wherein at least some of said URIs are derivable from their corresponding said predetermined codes by look up in an association table associating said predetermined codes and URIs according to said mapping.

30

4. A method according to claim 3, wherein said association table is held on at least one database server connected to said computer network, step (c) involving accessing said database server over the computer network (50) to determine the said URI corresponding to the said predetermined code (54).

5

5. A method according to claim 4, wherein said at least one database server is provided by a DNS-type distributed database system in which said URIs are held in records associated with respective names, herein referred to as domain names, by which the records can be retrieved, step (c) involving translating said predetermined code (54) into
10 a corresponding said domain name and using this domain name to retrieve the URI of the required service resource item (49) from said DNS-type distributed database system.

6. A method according to claim 1, wherein at least two said service resource items (49) are located at the same URI, the said predetermined codes (54) of these service resource
15 items including respective relative-resource-identifier (RRI) values that are used at the server (51) holding the service resource items to identify the required resource item amongst the service resource items at the same URI.

7. A method according to any one of the preceding claims, wherein said switched
20 telecommunications system is a telephone system and said predetermined codes comprise numbers from at least one of the following categories:

- the telephone number of the calling party;
- the telephone number of the called party.

25 8. A method according to claim 1, wherein said switched telecommunication system is a telephone system, at least some of said predetermined codes (54) being called-party telephone numbers and serving to retrieve service resource items (49) that are the current telephone numbers of the called parties.

30 9. A method according to any one of the preceding claims, wherein at least one said service resource item (49) is service logic which is executed by the corresponding server

(51) upon being accessed with the result of this execution being returned to the accessing entity for use in bearer-channel setup control.

10. A method according to any one of the preceding claims, wherein at least one said
5 service resource item (49) is downloadable service data which upon being accessed is downloaded to the accessing entity for use thereby in bearer-channel setup control.

11. A method according to any one of the preceding claims, wherein at least one said
10 service resource item (49) is downloadable service logic which upon being accessed is downloaded to the accessing entity for execution in bearer-channel setup control.

12. A method according to claim 1, wherein said computer network (50) is generally accessible to users of the telecommunications system.

15 13. A method according to any one of the preceding claims, wherein said computer network (50) is the Internet.

14. A method according to any one of the preceding claims, wherein said switched telecommunication network is a PSTN.

20

15. A method according to any one of claims 1 to 13, wherein said telecommunication system is a private system including a PABX with which said service control system (42) is associated, and wherein said computer network (50) is a LAN.

25 16. A method according to any one of the preceding claims, wherein said URIs are URLs and/or URNs, and said server (51) is an HTTP server.

17. A method of accessing service resource items (49) for use in respect of setting up
bearer channels (60) through a switched telecommunications system, said method
30 including the steps of:

- 5 (a) — provisioning an HTTP server (51) connected to a computer communication system (50) with a plurality of service resource items (49) at a known URL by which said items are locatable on said computer communication system (50), said computer network being logically distinct from the telecommunications system, and said service resource items (49) relating to setup control for bearer channels (60) through said telecommunications system with each said service resource item being associated with a respective predetermined code (54), said predetermined codes (54) being distinct from said known URL and including respective relative-resource-identifier (RRI) values usable to identify a required
- 10 said service resource item (49) amongst the service resource items at the same URL;
- (b) — providing a mapping (55) between each said predetermined code (54) and the said known URL of the service resource item (49) associated with that predetermined code; and
- 15 (c) — utilising a said predetermined code (54) to access a corresponding said service resource item by the substeps of:
- (i) - using said mapping (55) to determine the URL corresponding to that resource item,
- (ii) - using the URL determined in substep (ii) to access the HTTP server (51) holding the required service resource item (49) over said computer communications system (50); and
- 20 (iii) - using the relative-resource-indicator (RRI) part of the predetermined code (54) to identify the required service resource item from amongst the service resource items held at the same URL.

25

18. A method according to claim 17, wherein said telecommunications system is a telephone system and said predetermined codes (54) are personal numbers associated with individual telephone users, said service resource items (49) being current telephone numbers where said individual telephone users may be reached.

30

APPENDIX A

PAGE 1 of 7

Please amend the first paragraph on page 1 of the specification as filed (see lines 7-9 on page 1) as indicated below.

This is a divisional of co-pending U.S. Serial No. 09/077,795, filed on June 5, 1998, which is the U.S. National Stage Application of PCT International Application No.

PCT/GB96/03055, filed on 11 December 1996. The present invention relates to a method [of accessing service resource items that are intended to be used in setting up bearer channels through a switched telecommunications system]and apparatus for determining a telephone number for accessing a target entity identified by a number string.

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APPENDIX A

PAGE 2 of 7

Please amend pages 16-18 of the specification as filed as indicated below.

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Internet calling party on the progress of call set to the destination telephone over the PSTN local to that telephone; this feedback need only be in terms of whether or not the call has succeeded.

- 5 ☐ From the foregoing it can be seen that the current cooperative use of the Internet and telephone system is at a very simple level.

It is an object of the present invention to provide a method of accessing a service resource item over a communications network that facilitates the integration of the
10 PSTN and the WWW.

Summary of the Invention

According to the present invention, there is provided a method of accessing service resource items for use in respect of setting up bearer channels through a switched
15 telecommunications system, the method including the steps of:

- (a) -- provisioning at least one server connected to a computer network with a plurality of service resource items that are thereafter locatable on said computer network by corresponding known URIs, said computer network being logically distinct from the telecommunications system, and said service resource items
20 relating to setup control for bearer channels through said telecommunications system with each said service resource item being associated with a respective predetermined code, said predetermined codes being distinct from said URIs and identifying end-point entities for said bearer channels;
- (b) -- providing a mapping between each said predetermined code and the said known
25 URI of the service resource item associated with that predetermined code; and
- (c) -- utilising a said predetermined code to access a corresponding said service resource item by using said mapping to determine the URI corresponding to that resource item and then using this URI to access the service resource item over said computer network.

30

In one embodiment, at least some of the URIs are derivable from their corresponding said predetermined codes by manipulation according to a function specified by said ☐

mapping. In another embodiment, at least some of the URIs are derivable from their corresponding said predetermined codes by look up in an association table associating said predetermined codes and URIs according to said mapping. This association table can advantageously be held on at least one database server connected to the computer network, step (c) involving accessing the database server over the computer network to determine the URI corresponding to the said predetermined code. Preferably, the said at least one database server is provided by a DNS-type distributed database system in which the URIs are held in records associated with respective names, herein referred to as domain names, by which the records can be retrieved. In this case, step (c) involves translating said predetermined code into a corresponding domain name and using this domain name to retrieve the URI of the required service resource item from the DNS-type distributed database system.

More than one service resource item can be located at the same URI; in this case, the predetermined codes of these service resource items will include respective relative-resource-identifier values that can be used at the server holding the service resource items to identify the required resource item amongst the service resource items at the same URI.

The telecommunications system may be a telephone system with each said predetermined code being either the telephone number of the calling party or the telephone number of the called party (these numbers may either be the numbers of specific telephones, or personal numbers). In one preferred embodiment where at least some of said predetermined codes are called-party telephone numbers, the corresponding service resource items are the current telephone numbers of the called parties.

Generally as regards the nature of the service resources, these may be of the following type:

- 30 -- service logic intended to be executed by the corresponding server upon being accessed with the result of this execution being returned to the accessing entity;

- 1 -- downloadable service data which upon being accessed is intended to be downloaded to the accessing entity;
- 2 -- downloadable service logic which upon being accessed is intended to be downloaded to the accessing entity for execution thereby.

5

Preferably, where URIs are referred to in the foregoing, these URIs are URLs and/or URNs. Furthermore, the servers referred to are preferably HTTP servers.

10 It is to be understood that reference in the foregoing to the computer network being logically distinct from the telecommunications system is not to be taken to imply that there is physical separation of the two - indeed, there will frequently be joint use of the same physical infrastructure. Furthermore, not only may bearer channels set up in the telecommunications system share the same transmission medium as the computer network, but such a bearer channel may act as a pipe for traffic across the computer

15 network. The intention of requiring the computer network to be logically distinct from the telecommunications system is to exclude computer networks that are dedicated to the management or monitoring of the bearer network and effectively form part of the telecommunications system itself.

20 Preferably, the computer network is generally accessible to users of the telecommunications system as this provides a number of benefits to users that will become apparent hereinafter. The phrase "generally accessible" should not be construed as meaning that all users of the telecommunications system have such access to the computer network or can get such access but, rather, it should be understood as

25 meaning that a significant proportion of these users have or can obtain access to the computer network.

By way of example, in one preferred embodiment of the invention, the computer network generally accessible to users of the telecommunications system but logically

30 distinct from it, is the Internet and the telecommunications system is a public telephone system. In another embodiment, the telecommunication system is a private system including a PABX, and the computer network is a LAN.

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APPENDIX A

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According to one aspect of the present invention, there is provided a method of determining a telephone number for contacting a target entity identified by a number string, said method comprising the steps of:

- (a) - storing in the domain name system (DNS) of the Internet records each associated with a corresponding domain name and holding a telephone number of an entity associated with the domain name, each said domain name being related to a respective number string from which it can be derived by a process including parsing at least a substantial portion of the number string into at least a part of said domain name;
- (b) - applying said process to the said number string identifying the target entity whereby to form the related domain name; and
- (c) - supplying the domain name formed in step (b) to the DNS to retrieve the telephone number held in the corresponding said record.

According to another aspect of the invention, there is provided a method of determining a telephone number for contacting a target entity, said method comprising the steps of:

- (a) - forming, from a number string identifying the target entity, a domain name by a process including parsing at least a substantial portion of the number string into at least a part of said domain name;
- (b) - supplying the domain name formed in step (a) to the domain name system of the Internet and receiving back from the domain name system a resource record including a telephone number.

According to further aspect of the present invention, there is provided a method of determining a telephone number for contacting a target entity identified by a number string, said method comprising the steps of:

APPENDIX A

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- (a) - storing in a DNS-type distributed database system, records each associated with a corresponding domain name and each holding a telephone number of an entity associated with the domain name, each said domain name being related to a respective number string from which it can be derived by a process including parsing at least a substantial portion of the number string into at least a part of said domain name;
- (b) - applying said process to the said number string identifying the target entity whereby to form the related domain name; and
- (c) - supplying the domain name formed in step (b) to the DNS-type distributed database to retrieve the telephone number held in the corresponding said record.

According to a still further aspect of the invention, there is provided a server of the domain name system of the Internet, the server holding at least one resource record that provides a mapping from a domain name to a telephone number of a party associated with the domain name, at least a substantial portion of the domain name being in the form of a number string that has been parsed into plural domain-name labels.

According to a yet further aspect of the invention, there is provided a DNS-type distributed database system holding at least one resource record that provides a mapping from a domain name to a telephone number of a party associated with the domain name, at least a substantial portion of the domain name being in the form of a number string that has been parsed into plural domain-name labels.

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Colin LOW, et al.)
)
) Group: not yet assigned
Serial No.: Not yet assigned)
) Examiner: not yet assigned
Filed: Concurrently herewith)
) Our Ref: B-3472DIV1PCT 619164-7
For: "METHOD OF ACCESSING)
SERVICE RESOURCE ITEMS THAT)
ARE FOR USE IN A)
TELECOMMUNICATIONS SYSTEM") Date: January 18, 2002

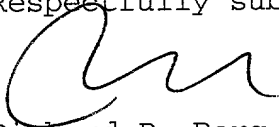
Commissioner of Patents and Trademarks
Box New Patent Application
Washington, D.C. 20231

ATTN: OFFICIAL DRAFTSMAN

Sir:

Enclosed herewith are fourteen (14) sheets of formal drawings
(Figs. 1-11, 12A-12C, 13-18), which should be entered into the
above-identified application to replace the drawings presently on
file.

Respectfully submitted,


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Enclosure: 14 sheets of formal drawings
(Figs. 1-11, 12A-12C, 13-18)

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1/14

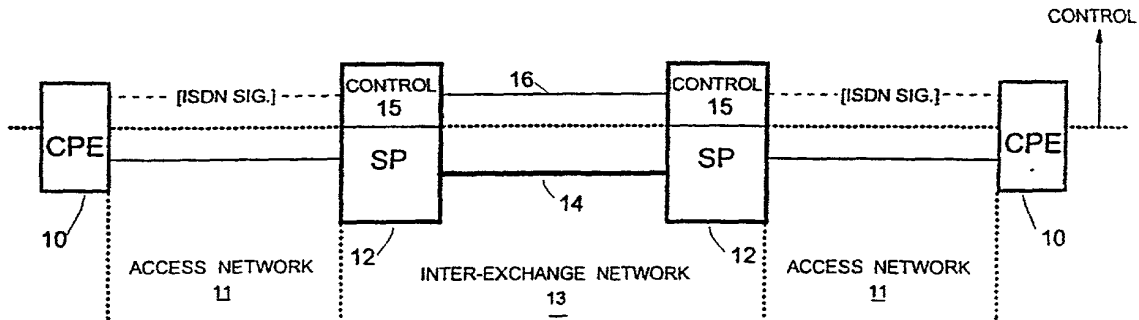


FIG. 1
(PRIOR ART)

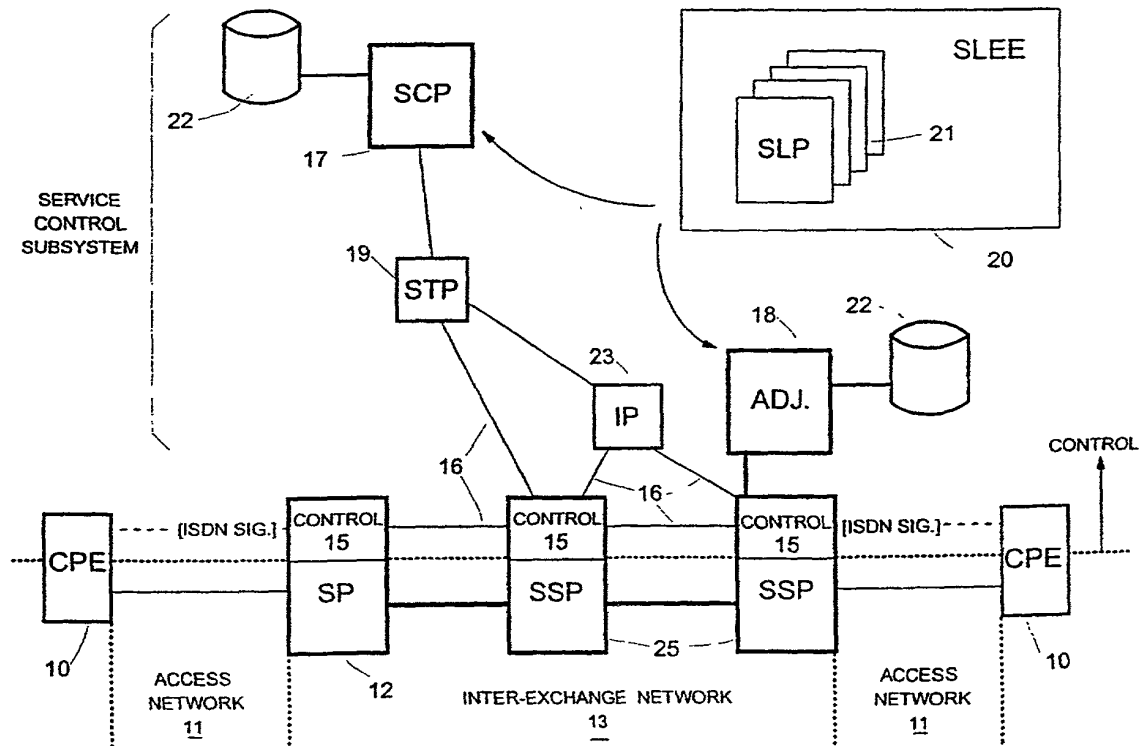


FIG. 2
(PRIOR ART)

SECRET

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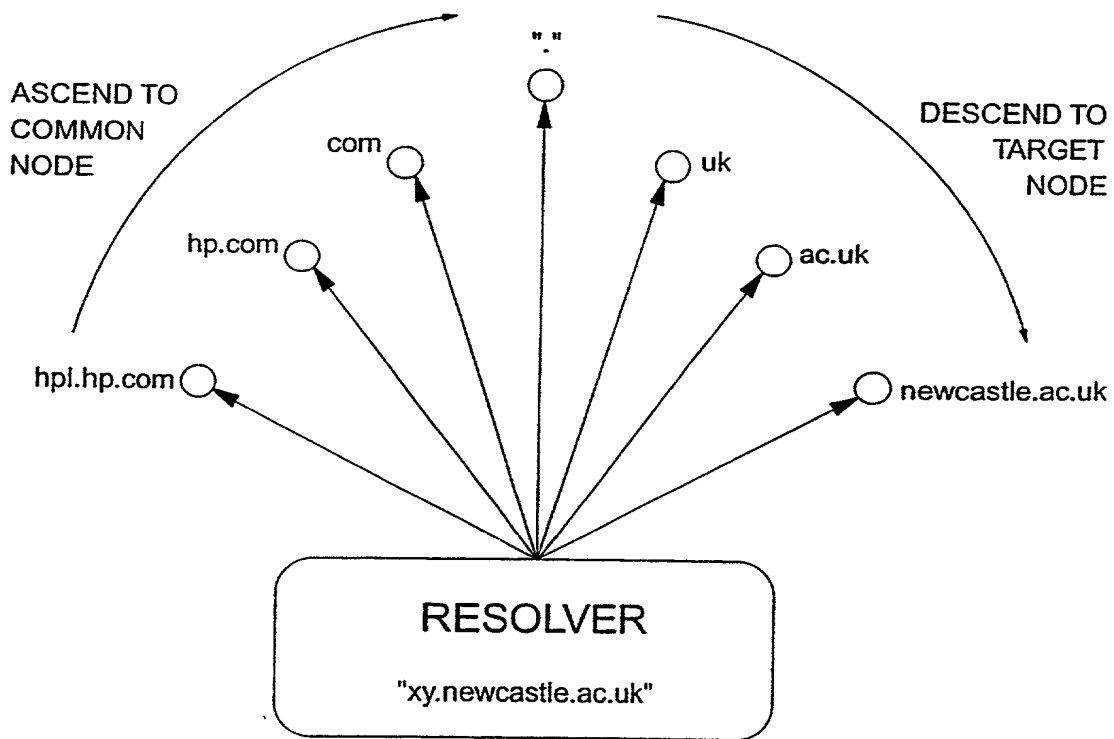


FIG. 3
(PRIOR ART)

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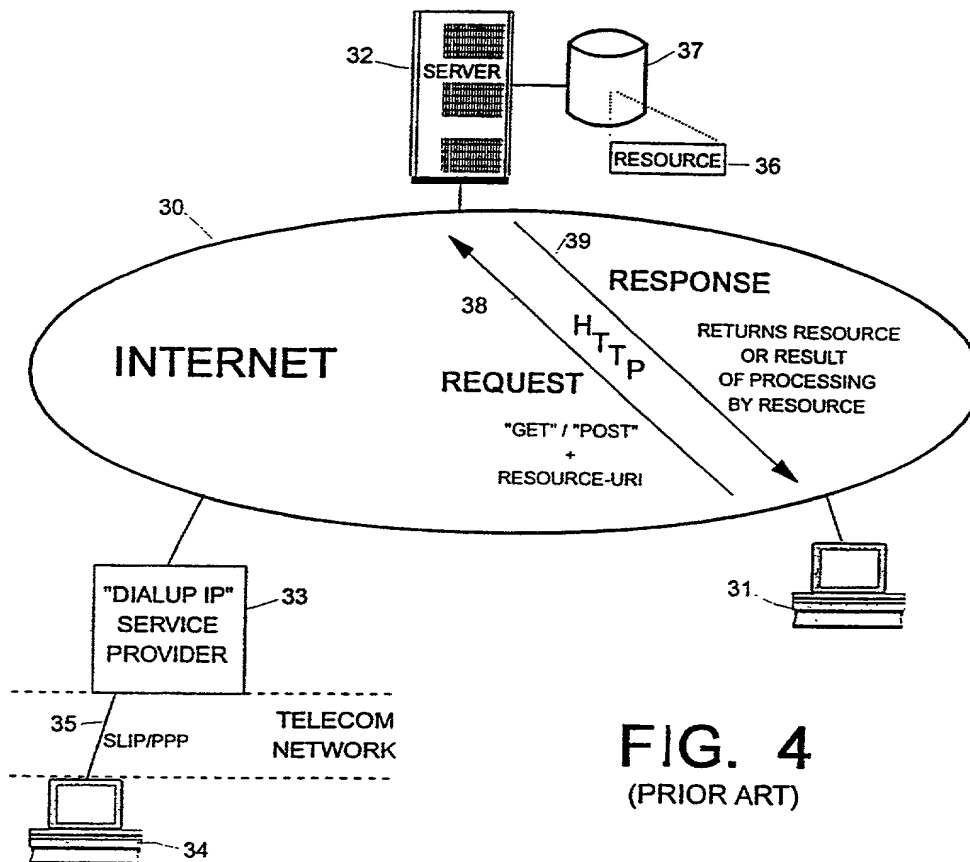


FIG. 4
(PRIOR ART)

<http://www.hp.com/Products.html>

SCHEME

HOST LOCATION

ABSOLUTE PATH

FIG. 5
(PRIOR ART)

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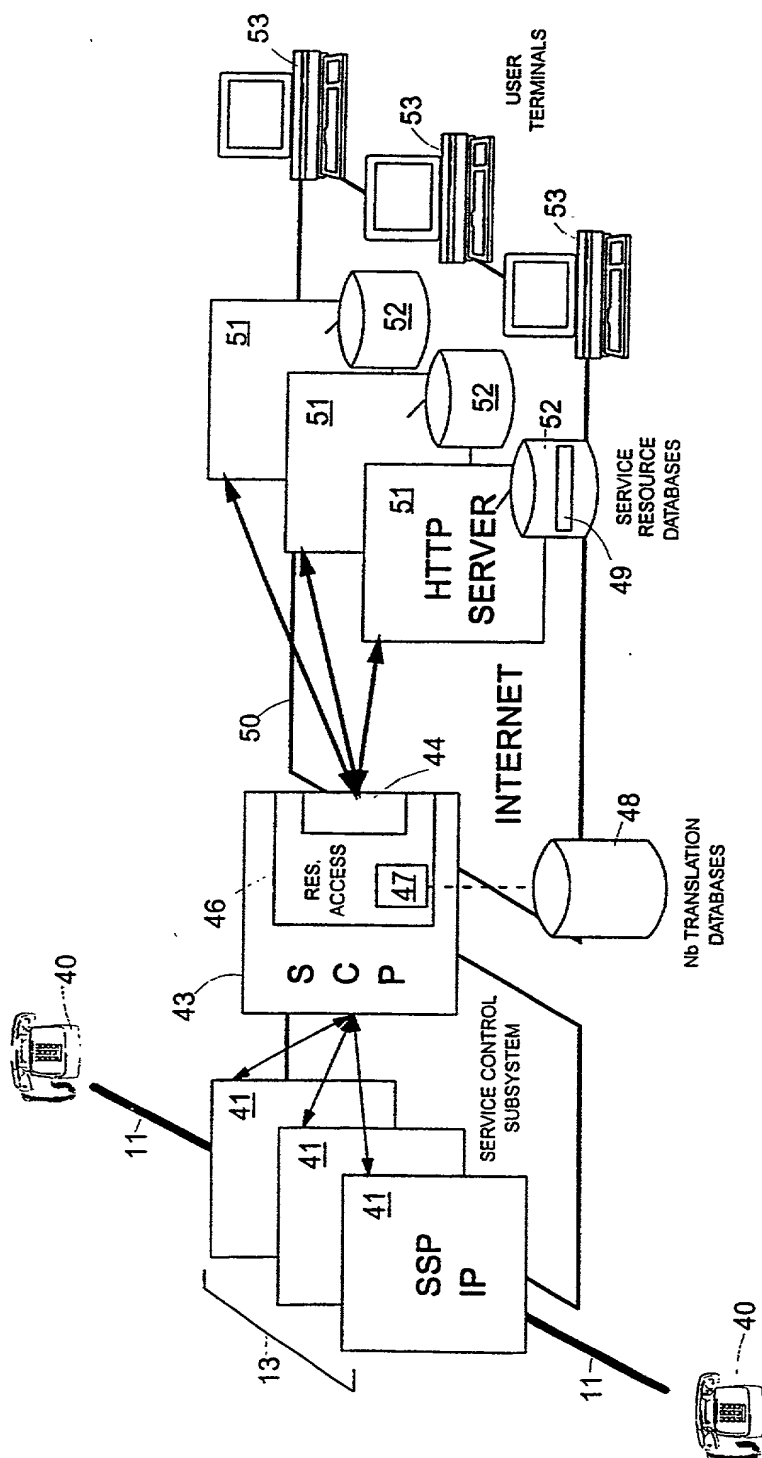


FIG. 6

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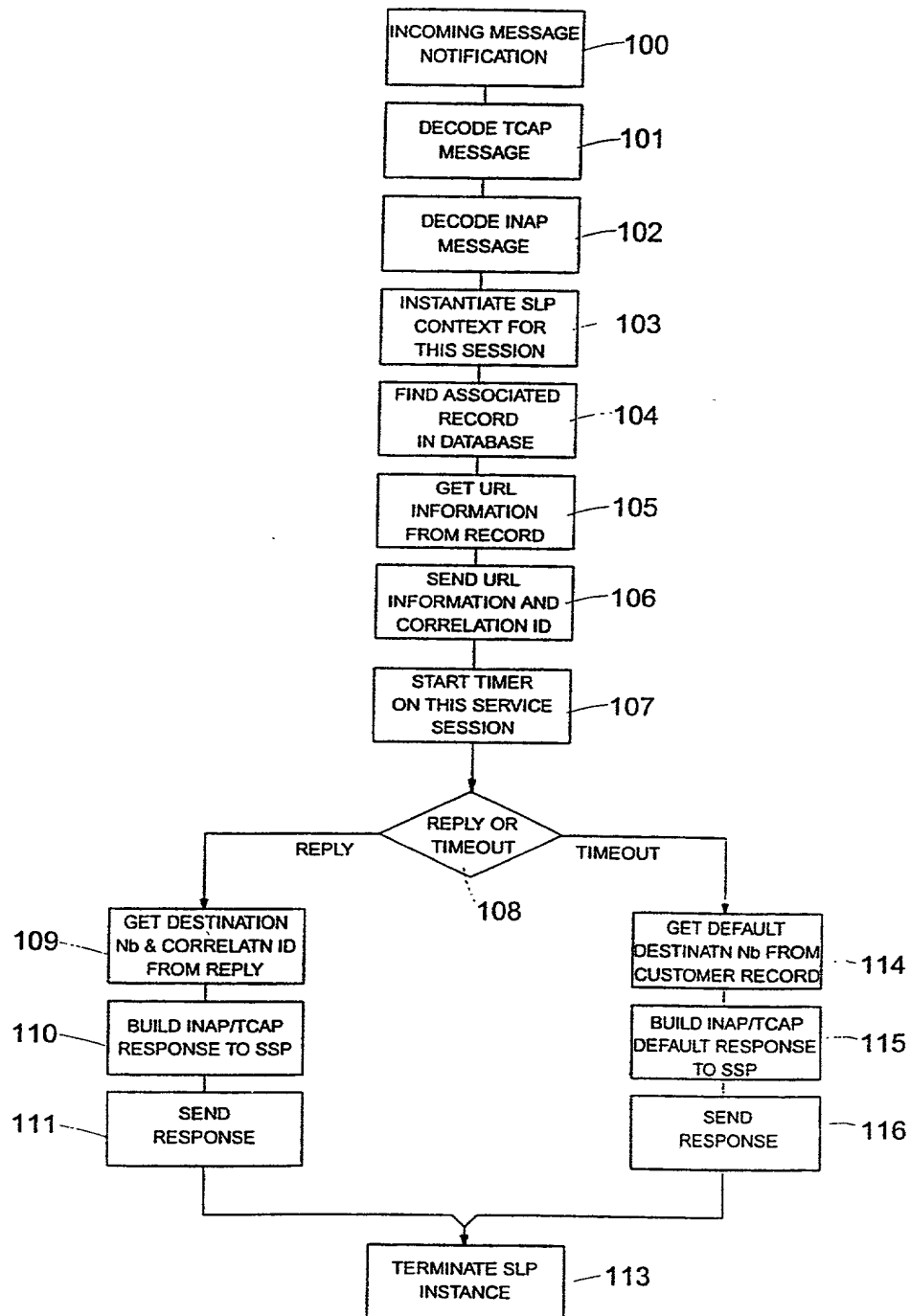


FIG. 7

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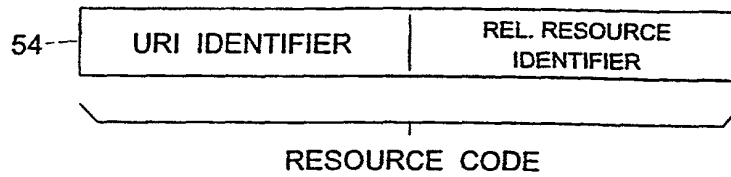


FIG. 8

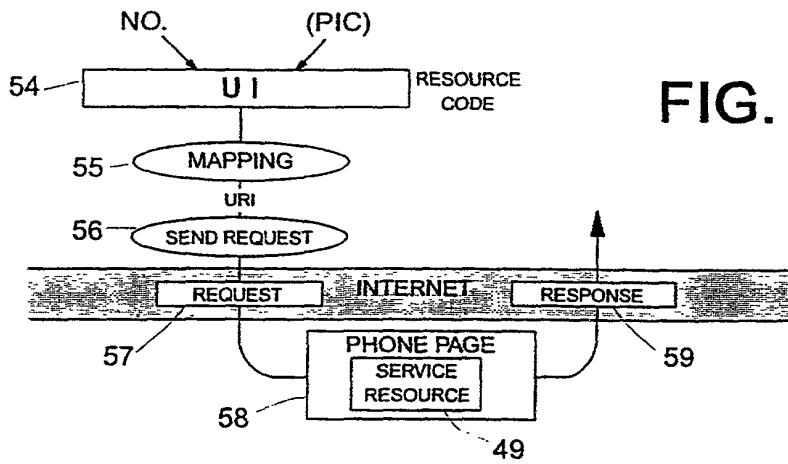


FIG. 9

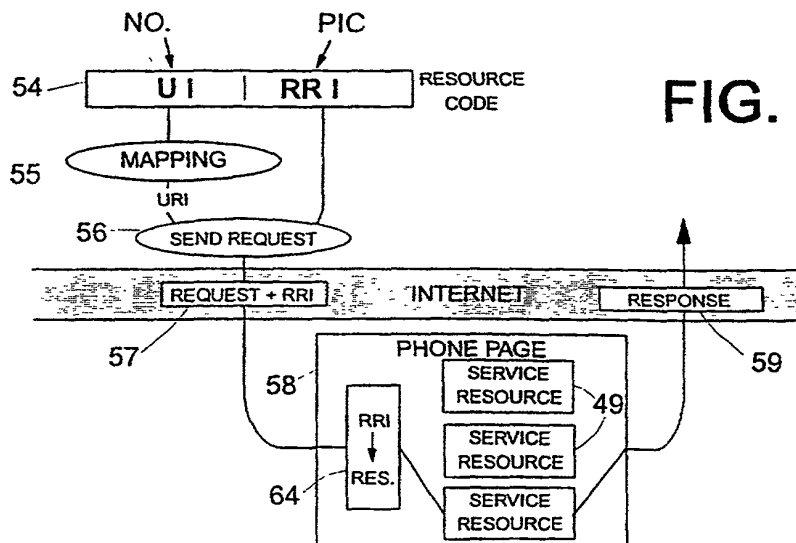


FIG. 10

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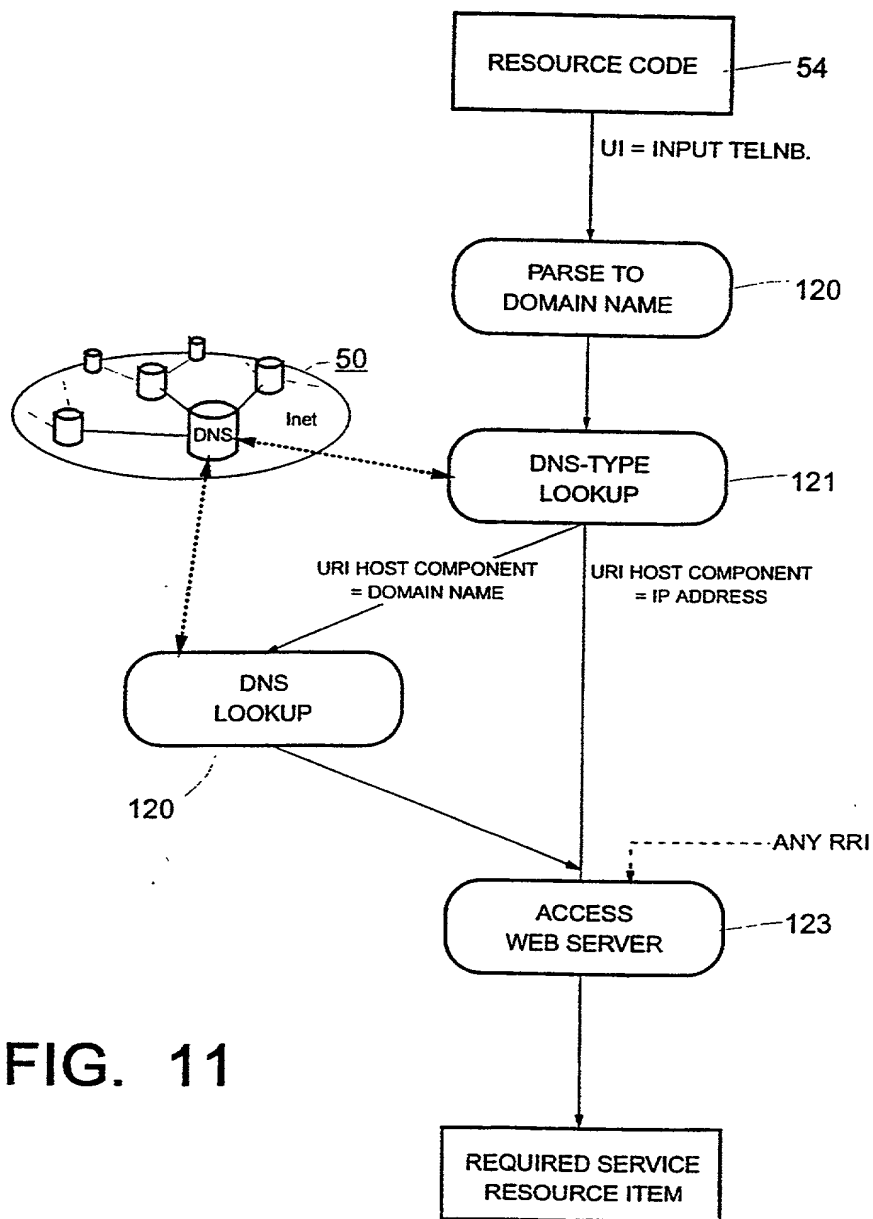


FIG. 11

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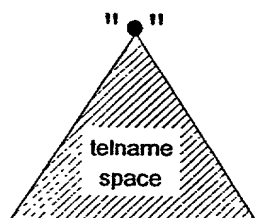


FIG. 12A

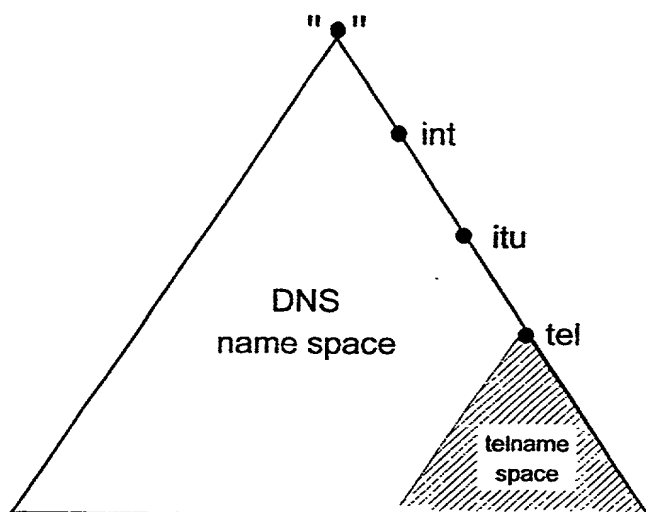


FIG. 12B

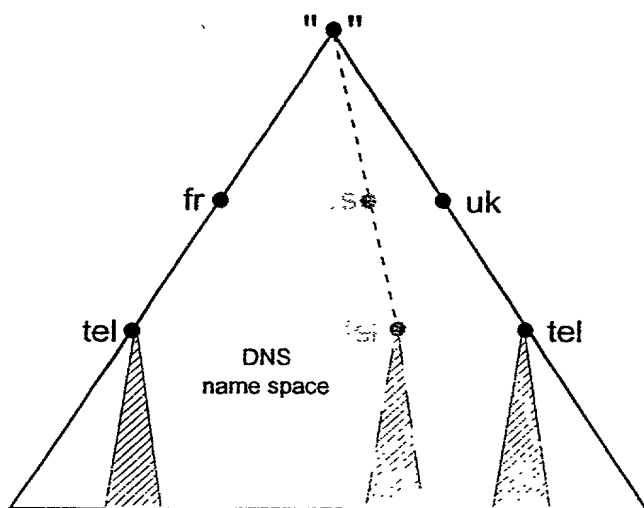


FIG. 12C

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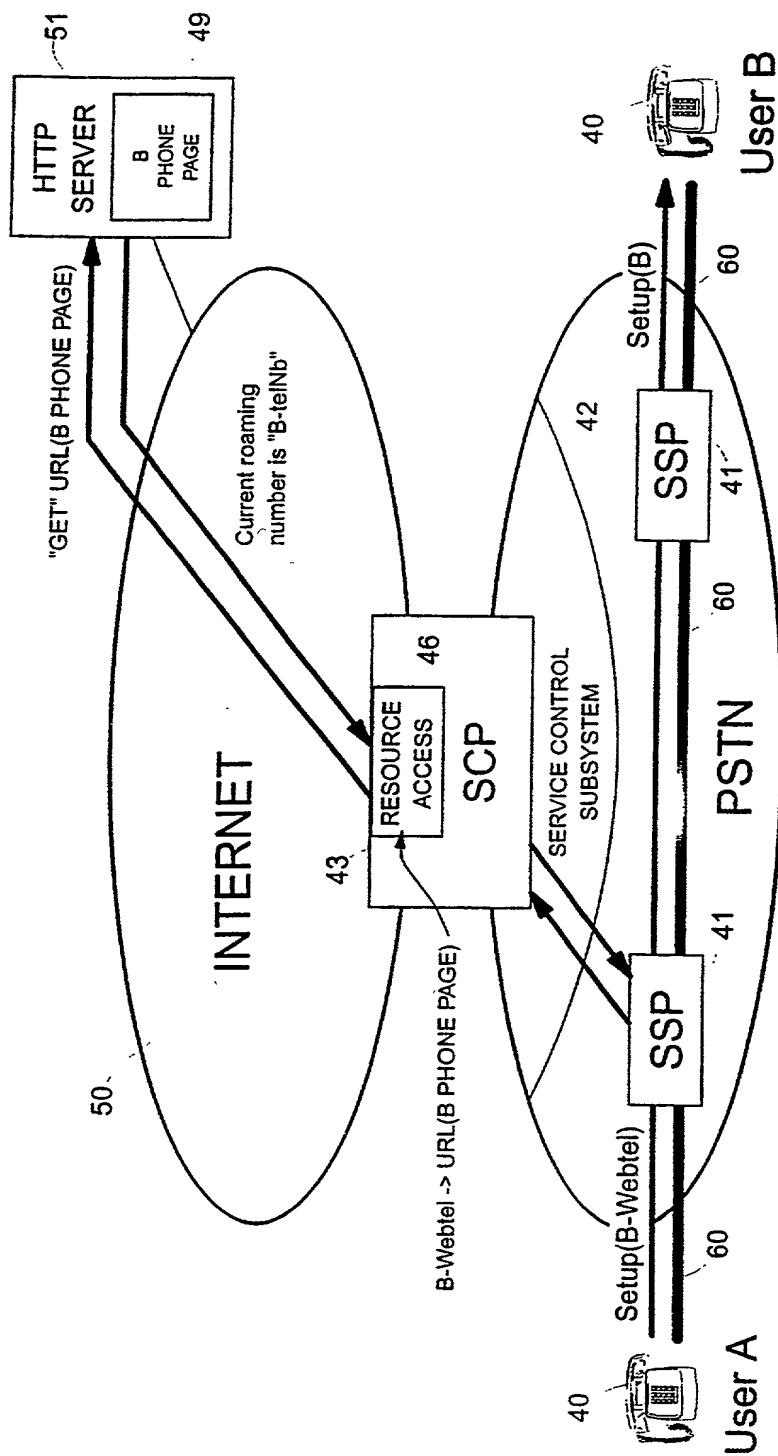


FIG. 13

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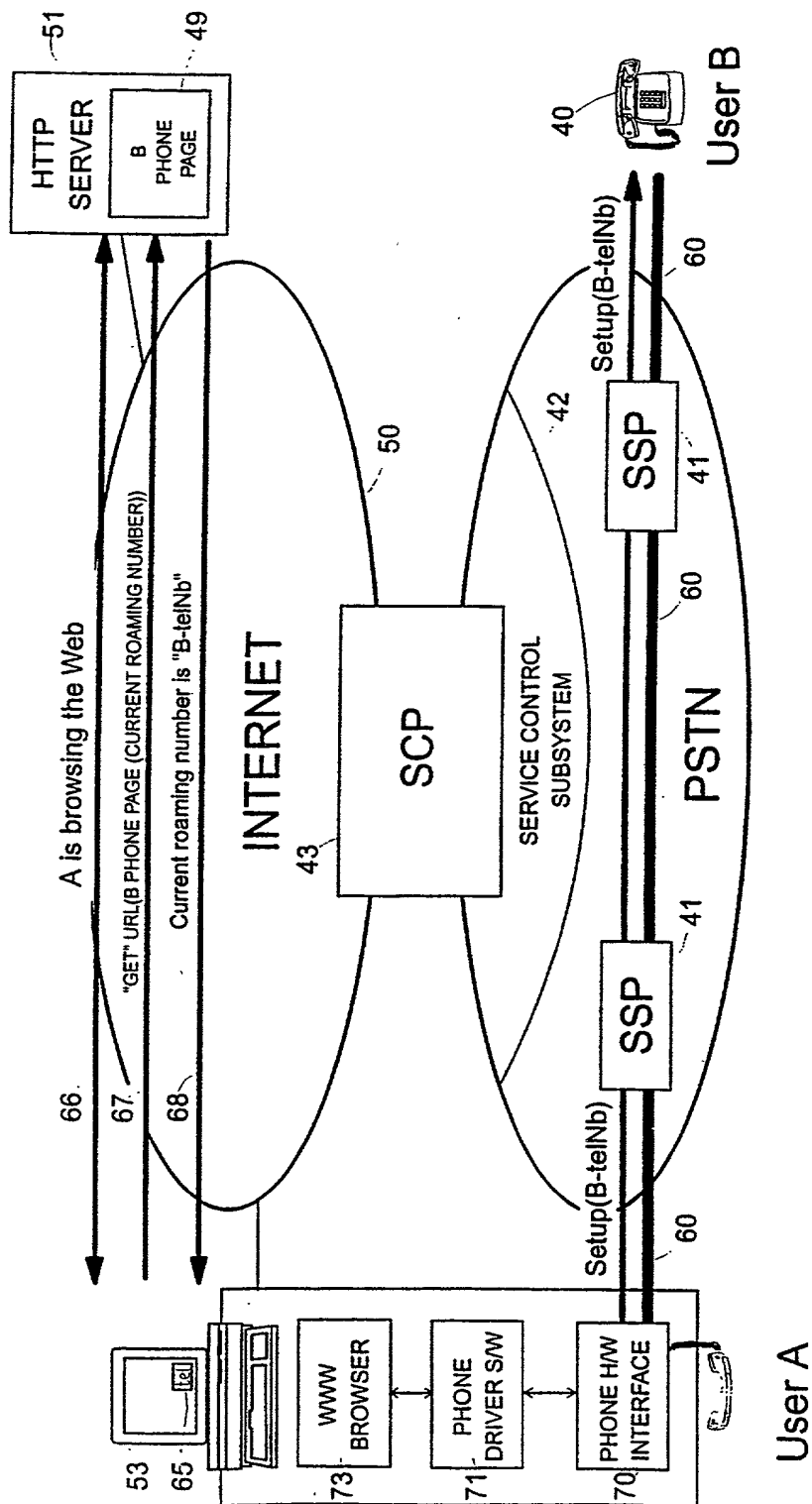


FIG. 14

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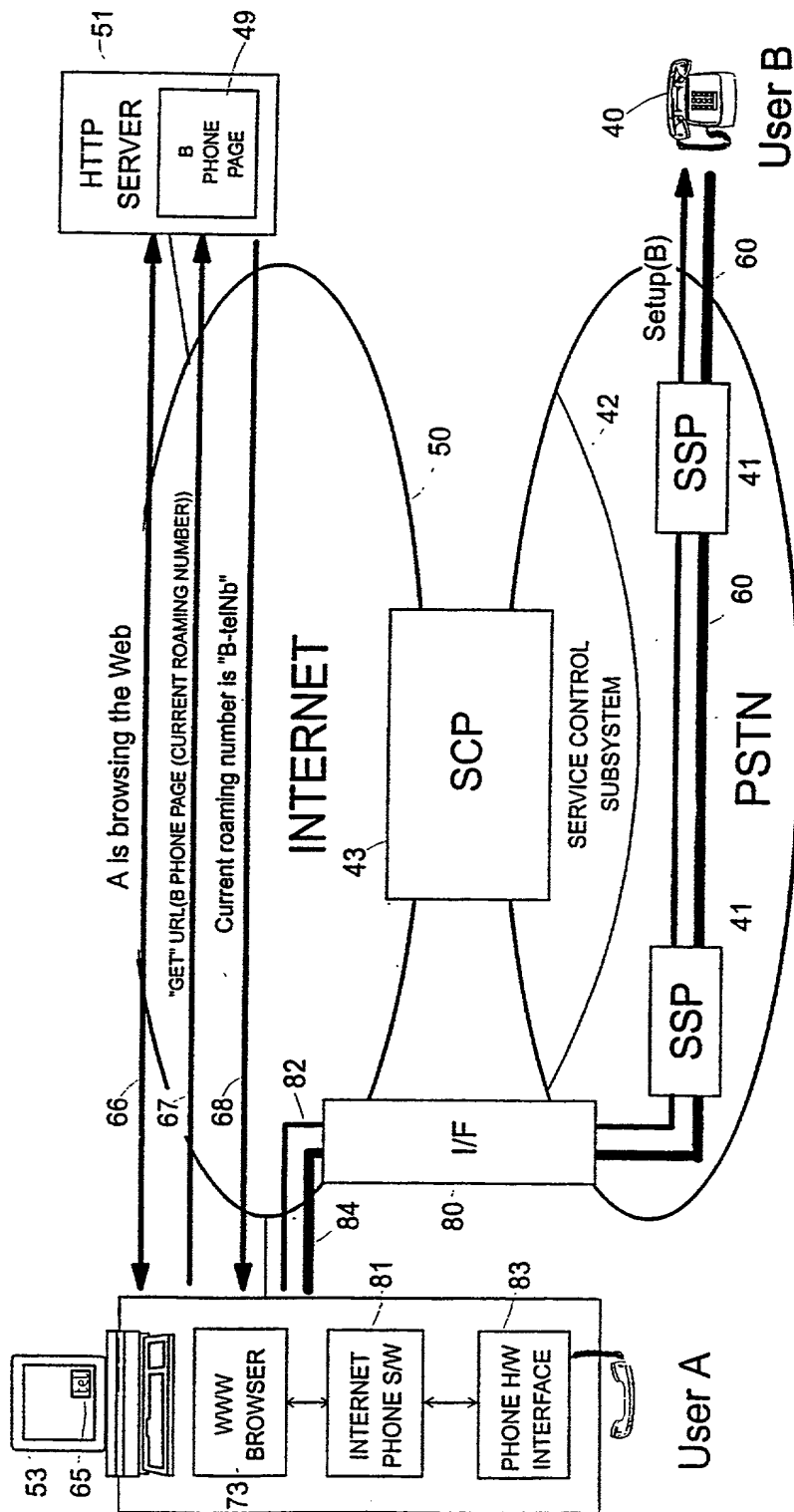


FIG. 15

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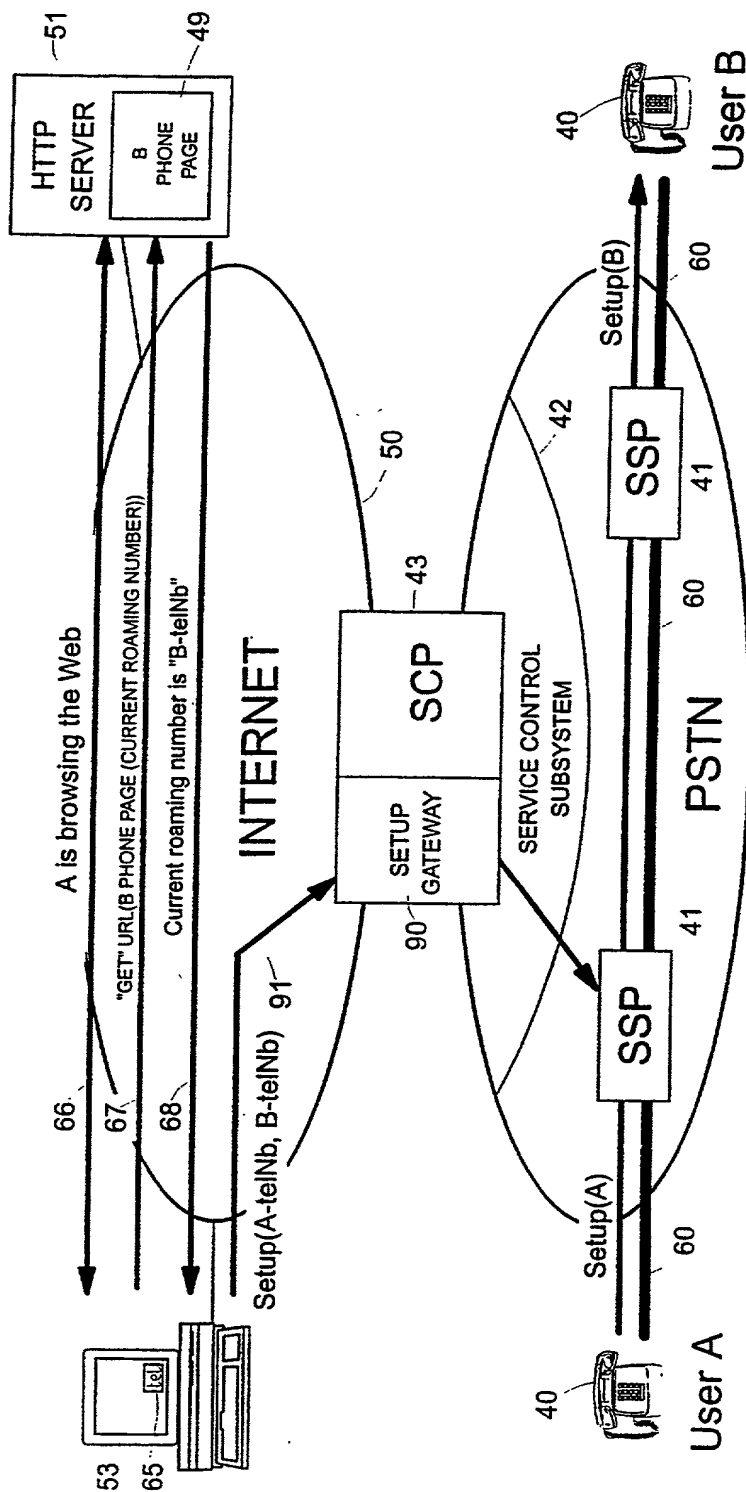


FIG. 16

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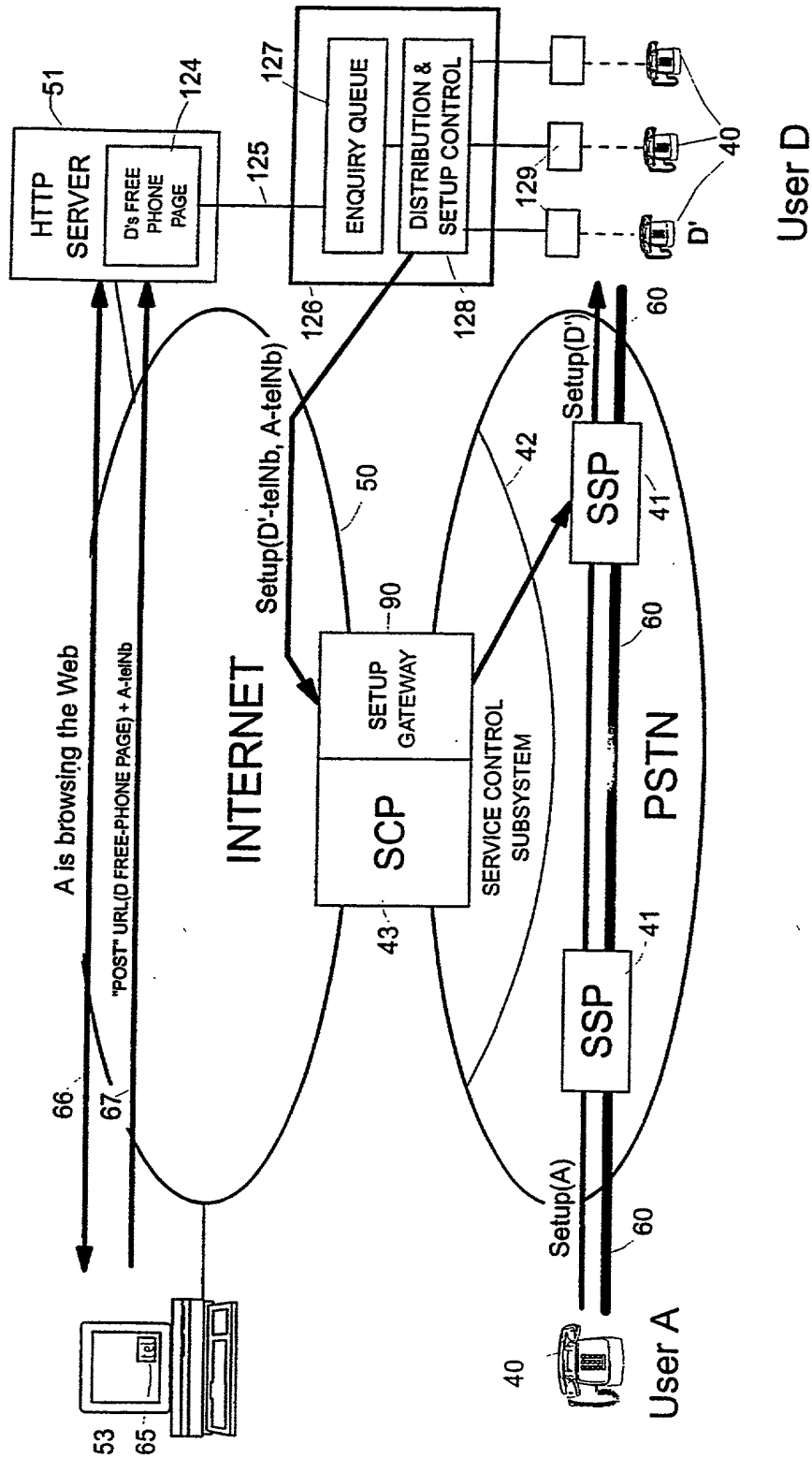


FIG. 17

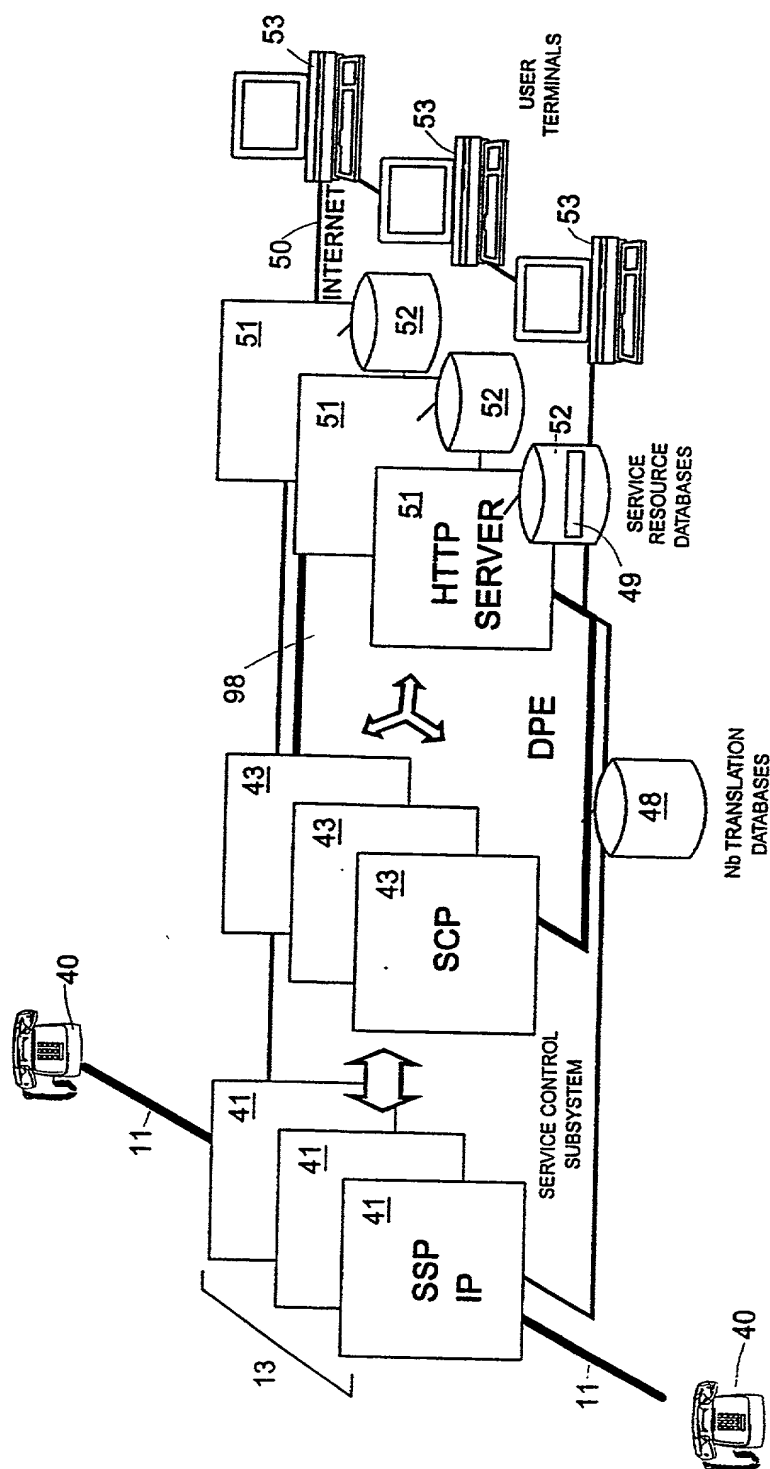


FIG. 18